



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number : **0 648 482 A2**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number : **94307566.3**

(51) Int. Cl.<sup>6</sup> : **A61F 13/15**

(22) Date of filing : **14.10.94**

(30) Priority : **15.10.93 JP 258719/93**  
**08.12.93 JP 307753/93**

(43) Date of publication of application :  
**19.04.95 Bulletin 95/16**

(84) Designated Contracting States :  
**BE DE ES FR GB IT NL SE**

(71) Applicant : **UNI-CHARM CORPORATION**  
**182, Shimobun**  
**Kinsei-cho**  
**Kawanoe-shi Ehime-ken (JP)**

(72) Inventor : **Yamamoto, Masamitsu**  
**18-32 Shimobun-otsu,**  
**Kinsei-cho**  
**Kawanoe-shi, Ehime-ken (JP)**  
Inventor : **Yamaki, Rumi**  
**1203 Yamadai,**  
**Kinsei-cho**  
**Kawanoe-shi, Ehime-ken (JP)**  
Inventor : **Kitaoka, Hideaki**  
**2-21-16 Takinai**  
**Funabashi-shi, Chiba-ken (JP)**

(74) Representative : **Murgatroyd, Susan Elizabeth**  
**et al**  
**Baron & Warren**  
**18 South End**  
**Kensington**  
**London W8 5BU (GB)**

(54) **Disposable absorbent pad.**

(57) A disposable absorbent pad comprises a pad member (1) adapted to present a boat-shape under the contractile force of elastic members (9,10) contained in side flaps (7), and an elastic support member (2). Longitudinally opposite ends of the pad member (1) are connected to front and rear sides of the support member (2) by end flaps (6) each comprising top- and back-sheets (3,4) of the pad member (1) and divided into a pair of end flap halves by a slit (8) so as to function as a suspending strap. The end flap halves are set apart in a V-shape with the slit (8) therebetween as the support member (2) is stretched and contribute to suspend the pad member (1) with high stability.

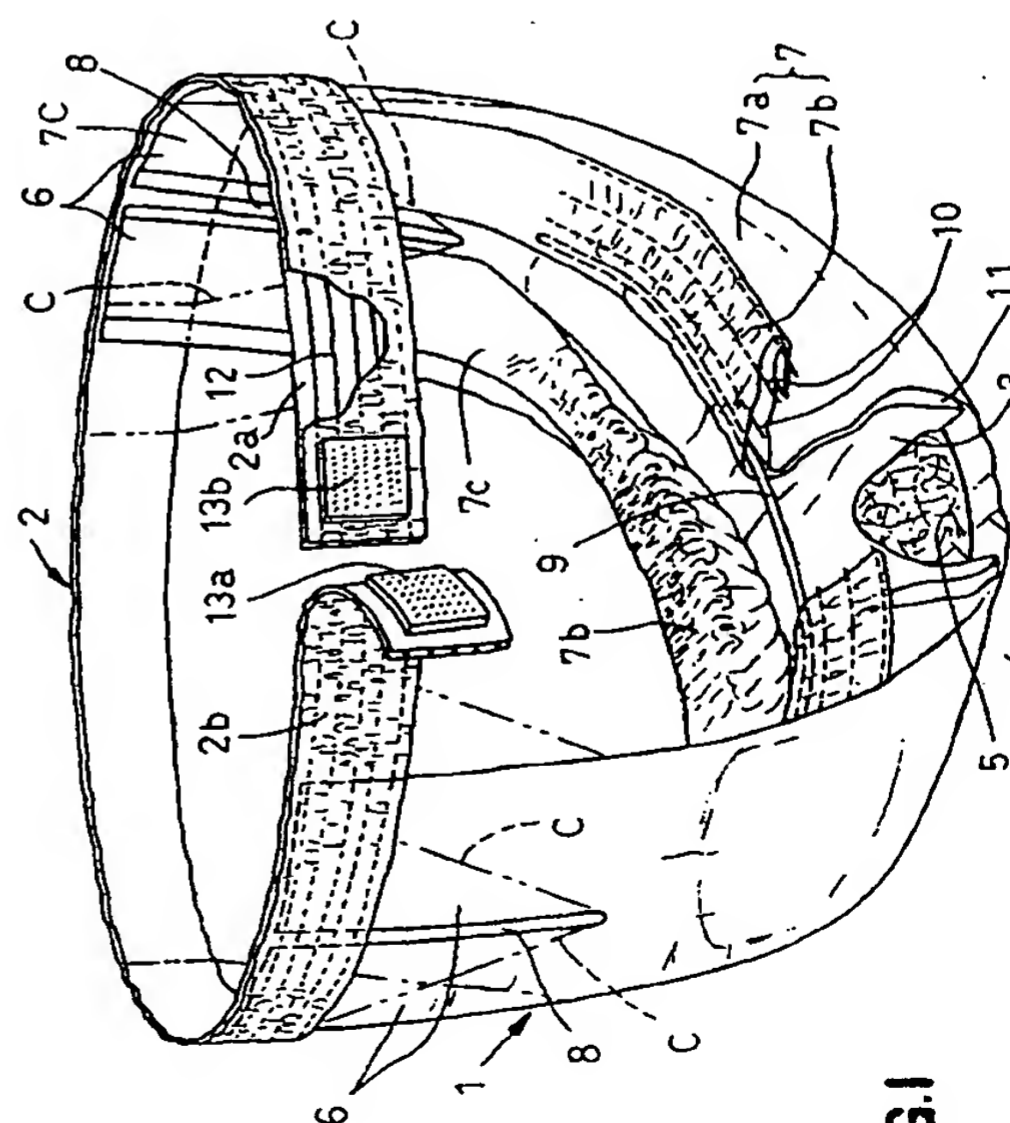


FIG.1

EP 0 648 482 A2

The present invention relates to so-called disposable absorbent pads, particularly such as incontinence pads or sanitary or menstruation pads, adapted to be used only once and then thrown away.

So far as it is known to the inventors, there are several articles of prior art used as incontinence guards which are partially similar in their constructions to the disposable absorbent pad of the present invention. For example, the specification of U.S. Patent No. 3,452,753 discloses an article comprising a water-impermeable outer cover (not disposable) designed for elastic fitting around the wearer's waist- and leg-holes and a support attached to the inner side of the cover for a separate absorbent pad and Japanese Laid-Open Patent Application No. 1982-143502 discloses an article comprising an elastically stretchable waist band and straps interconnected to each other so as to form a supporter (not disposable) functioning to support a separate absorbent pad, wherein the supporter surrounds the wearer's legs not completely but partially.

These well known techniques are similar to embodiments of the invention in that they are provided with straps connected to the elastically stretchable waist band to support the absorbent pad in direct or indirect manner and the basic body or supporter is configured so as to surround the wearer's legs not completely but partially.

There are many other incontinence guard articles of prior art, particularly of disposable type, for example, a disposable incontinence guard article comprising a liquid-permeable topsheet, a liquid-impermeable backsheet, a liquid-absorbent core sandwiched between these two sheets, and elastically stretchable members arranged along waist- and leg-holes and such an article further comprising a separate absorbent pad to be attached to the inner side of the article.

The straps employed by the prior art disclosed in U.S. Patent No. 3,452,753 appear to be provided for the purpose of assuring a stability with which a pad member of the article can be put on the wearer's body and the straps employed by the prior art disclosed in Japanese Laid-Open Patent Application No. 1982-143502 function only as components of the supporter.

According to the arrangement disclosed in the specification of U.S. Patent No. 3,452,753, much time and labor would be required to make the article since the straps comprise a combination of the basic component of the article and separate components. According to the arrangement disclosed in Japanese Laid-Open Patent Application No. 1982-143502, the supporter forms a part of the article but a wearer would have considerable difficulty using the article since the wearer must exactly apply the absorbent pad provided separately of the supporter to the latter. Such arrangement appears to be deficient in stability

with which the absorbent pad could be suspended and therefore to be short of reliable avoidance of excretion leakage. Furthermore, neither of these straps of the prior art have any elastic stretchability and cannot therefore pull the basic body or supporter up toward the wearer's crotch. Accordingly, the absorbent pad is not maintained in sufficiently close contact with the wearer's crotch so as to prevent leaking of excretion from occurring around this zone.

In view of the problem as has been mentioned above, it is a principal object of the invention to eliminate the problem as has been described by providing means functioning as suspender straps respectively forming parts of longitudinally opposite ends of a pad member so that the pad member may be elastically suspended by such means from an elastic waist band or short pants with an elastic waist band.

To achieve the object set forth above, the present invention basically resides in a disposable absorbent pad comprising a pad member to be placed at least in the wearer's crotch and a support member to be placed at least around the wearer's waist, said pad member comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core sandwiched between these two sheets, wherein said top- and/or backsheets extend outwardly beyond longitudinally opposite ends as well as transversely opposite side edges of said core to form end and side flaps, respectively, said end flaps are formed with slits bisecting them and extending to the longitudinally opposite ends thereof, said side flaps are provided at least in their outer zones and crotch zones with longitudinally stretchable elastic members by attaching them in their stretched states to said side flaps, then with said elastic members being held in their stretched states, said side flaps are at least partially folded inwards and bonded together at longitudinally opposite ends of these portions to form the pad member, and said support member is connected to the longitudinally opposite ends of said end flaps, respectively.

In a basic embodiment of the invention, said portions of the side flaps folded inwards are further at least partially folded outwards.

The top- and backsheets are preferably made of material having a stretchability at least longitudinally of the pad member and thereby the respective end flaps are made stretchable in their longitudinal direction.

The elastic support member may comprise an elastic waist band or short pants with an elastic waist band.

In actual use of the pad, as the support member is placed with predetermined positioning around the wearer's waist, the end flap halves formed by the slit in each flap are far apart from each other substantially forming a V-shape and thereby suspending the pad member with high stability. With the end flaps being

provided with an appropriate stretchability, the pad member is pulled up against the wearer's crotch and at the same time the outer side edges of the respective side flaps are brought under the effect of the elastic members contained in these outer side edges into close contact with the wearer's crotch, particularly, with the inner sides of respective thighs adjacent the respective groins. When it is desired that the pad member should be more correctly positioned against the wearer's crotch, the pad member may be held by the hand, then pulled down against the tensile force of the end flaps and released, whereupon the pad member will be automatically brought back against the wearer's crotch under the contractile force of the end flaps. Obviously, such operation may be repeated, if necessary.

With the pad member correctly placed on the wearer's body in this manner, the side flaps are erected by contraction of the elastic members contained therein against the wearer's skin, thus generally presenting a boat-shape having a substantially U- or inverted  $\Omega$ -shaped transverse-section and a substantially bow-shaped longitudinal section, so that the side flaps may completely receive and guide liquid excretion to the core where the excretion is absorbed and held.

The invention will be described in more detail by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a partially broken-away perspective view showing the invention embodied in the form of an incontinence pad as developed for actual use;

Fig. 2 is a sectional view of a pad member taken in the middle of its length;

Fig. 3 is a perspective view showing an alternative embodiment of a waist band as an elastic support member;

Fig. 4 is a view similar to Fig. 1 but showing an alternative embodiment of the pad member;

Fig. 5 is a view similar to Fig. 1 but showing another embodiment of the pad member having elastic members which continuously extend in the side and end flaps thereof.

Fig. 6 is a perspective view showing disposable pants as yet another embodiment of the invention;

Fig. 7 is a perspective view showing the same pants, partially in a section taken along a line A-A in Fig. 6; and

Fig. 8 is a sectional view taken along a line B-B in Fig. 6.

Referring to Figs. 1 and 2, a pad of the invention generally comprises a pad member 1 and an elastic waist band 2 as a support member formed separately from the pad member 1.

The pad member 1 comprises a liquid-permeable topsheet 3, a liquid-impermeable backsheet 4, a relatively small and narrow liquid-absorbent core 5

sandwiched between these two sheets 3, 4, and end and side flaps 6, 7 comprising portions of the top- and backsheet 3, 4 extending outwards beyond longitudinally opposite ends and laterally opposite side edges of the core 5, respectively, and banded together by bonding means such as ultrasonic welding, heat welding or adhesive. When a smooth and slippery film such as a plastic sheet (not shown) is used as the backsheet 4, the outer surface of the backsheet 4 may be laminated with a nonwoven fabric.

Each end flap 6 is provided in the middle transversely thereof with a slit 8 extending to its outer end. The end flap 6 preferably has an appropriate stretchability. To achieve this, the top- and backsheet 3, 4 may be made of materials having stretchability at least longitudinally of the pad member 1 or, as will be described later, elastic members 9, 10 may be continuously arranged so as to be contained not only in the side flaps 7 but also in the end flaps 6 (see Fig. 5).

Each side flap 7 contains longitudinally stretchable elastic members 9, 10 along at least a section in its outer zone extending between a line approximately defining the middle of its whole width and the outermost edge thereof destined to be applied against the wearer's crotch. The elastic members 9, 10 are bonded in their stretched state between the top- and backsheet 3, 4 by adhesive of suitable type. The elastic member 9 comprises a single elastic element having a relatively high stretching stress while the elastic member 10 comprises a plurality of elastic elements arranged in parallel with each other and having a relatively low stretching stress. These elastic members 9, 10 may continuously extend to points adjacent the outer end of the end flap 6. Each side flap 7 is folded inwards along a line 11 adjacent the outer side edge of the core 5, then the portion thus folded inwards is partially folded outwards along a line defined adjacent the elastic member 9 and longitudinally opposite ends 7c of the respective folded portions 7a, 7b are bonded by means of ultrasonic welding, heat welding, adhesive or the like to the portion of the topsheet 3 overlying the core 5.

So far as the pad is intended to be used exclusively as a continence guard, the pad member 1 except the end flaps 6 may be dimensioned so as to cover the urinary organs and the periphery thereof or, to look at, to be perceptibly larger than a usual menstruation pad or napkin. The pad member 1 except the end flaps 6 may be dimensioned to cover not only the urinary organs and the periphery thereof but also the anus and periphery thereof, if necessary.

In the pad member 1 of the foregoing arrangement, the side flaps 7 are risen primarily by the contractile force of the elastic member 9 against the wearer's skin, generally presenting a boat-shape having a substantially U-shaped or inverted  $\Omega$ -shaped transverse section and a substantially bow-shaped longitudinal section. The folded portions 7a, 7b of

each side flap 7 are inwardly collapsed in a completely flat state as the pad member 1 is subjected to a tension exerted thereon in the longitudinal direction. The pad member 1 thus flattened may be longitudinally folded to be compactly packaged.

The waist band 2 comprises a pair of narrow sheets 2a, 2b and a plurality of elastic members 12 extending longitudinally and spaced in parallel with each other transversely of the waist band 2, wherein these elastic members 12 are bonded in their longitudinally stretched states between the narrow sheets 2a, 2b by adhesive of suitable type. The waist band 2 has a stretchability significantly higher than the stretchability presented by the end flaps 6 of the pad member 1. Alternatively, the waist band 2 may comprise another material such as a conventional elastic tape comprising a fabric woven with elastic threads. The waist band 2 presents, when the pad has been placed around the wearer's waist and excretion has been absorbed in the pad member 1, a stretching stress sufficient to prevent the pad member 1 from slipping down due to the load of the pad member 1, thus holding excretion absorbed therein plus the stretching stress of the end flaps 6. Longitudinally opposite ends of the waist band 2 are provided on inner and outer surfaces with fastener means 13a, 13b of well known art, for example Velcro (Trademark), adapted to be engaged with each other. As will be apparent to those skilled in the art, one side of the waist band 2 may comprise fibers which are engageable with projecting loops of the one Velcro fastener 13a to eliminate a demand for the other Velcro fastener 13b. It is also possible to employ fastener means of any other type such a conventional tape fastener applied with pressure-sensitive adhesive. Alternatively, the longitudinally opposite ends of the waist band 2 may be arranged so as not to be detachably fastened together as shown by Fig. 3. It is also possible to provide the waist band 2 of endless fashion already formed in a step of its fabrication, though not shown.

With the pad member 1 being placed against the wearer's crotch, the fastener means 13a, 13b of the waist band 2 are located so as to leave the abdominal center free, and the end flaps 6 of the pad member 1 are bonded with their respective outer ends by means of ultrasonic welding, heat welding, adhesive or the like to the inner surface of the waist band 2 at appropriate positions unoccupied by the fastener means 13a, 13b.

The pad member 1 of Fig. 4 is similar to the pad member 1 of Figs. 1 and 2 except that each side flap 7 is not provided with a portion corresponding to said outwardly folded portion 7b of the previous embodiment and a portion 7a thereof corresponding to the inwardly folded portion 7a of the previous embodiment is provided with an elastic member 14.

The pad member 1 may be made of the same materials as usually used for disposable diapers, men-

struation pads or napkins and the like. For example, the topsheet 3 may be made of a nonwoven fabric, the backsheet 4 may be made of a plastic film and the core may be made of fluff pulps mixed with high absorption polymer powders. The waist band 2 may be made of, for example, soft sheets such as nonwoven fabric sheets having elastic threads sandwiched therebetween in the well known manner.

The pad member 1 of Fig. 5 corresponds to the pad member 1 of Fig. 4 and the elastic members 9, 10 contained in the side flaps 7 extend further into the respective end flaps 6 in order to provide these end flaps 6 also with longitudinal stretchability. As will be readily understood, the pad member 1 of Fig. 1 also may be modified in the same manner so that the elastic members 9, 10 extend further into the respective end flaps 6 and thereby these end flaps 6 also are provided with stretchability.

With the absorbent pad of the invention put on the wearer's body, the waist band 2 is stretched longitudinally or circumferentially thereof and, as indicated by two-dotchain lines C in Fig. 1, each pair of adjacent end flap halves 6 are set apart owing to the presence of the associated slit 8 from each other substantially in a V-shape so as to suspend the pad member 1 with high stability. The side flaps 7 are elastically brought into close contact with the wearer's crotch and the portions of the respective side flaps 7 extending along the respective elastic members 9 are elastically pressed against the wearer's groins. In this state, the pad member 1 presents substantially a boat-like shape so that excretion can be reliably received, absorbed and held by the pad member 1 without any apprehension that the excretion once received by the pad member 1 might leak outwards.

When the absorbent pad of the invention is used as means for a continence guard, the embodiment of Fig. 1 is suitable for common use by men and women while the embodiment of Fig. 4 is suitable for men's exclusive use. The embodiment of Fig. 1 is particularly effective to avoid the excretion leakage since this embodiment has the outwardly folded portions 7b destined to be elastically brought into surface contact with inner sides of the wearer's thighs over a relatively wide area. The embodiment of Fig. 1 is suitable also as a women's sanitary or menstruation pad and will be suitable as a sanitary or menstruation pad for women having disabled bodies if the waist band 2 is formed in endless fashion.

Referring to Figs. 6 to 8, a disposable absorbent pad as another embodiment of the invention generally comprises a pants member 101 as a support member and a pad member 102.

The pants member 101 comprises front and rear bodies bonded together along transversely opposite side edges thereof by means of ultrasonic welding, heat welding, adhesive or the like so as to form, in the well known manner, a waist-hole and a pair of leg-ho-

les. The pants member is made of material stretchable in length and width, and said waist- and leg-holes are so dimensioned that these holes may closely fit around the wearer's waist and legs, respectively, under the contractibility inherent in the material.

The pad member 102 comprises a liquid-permeable topsheet 104, a liquid-impermeable backsheet 105 and a relatively small and narrow liquid-absorbent core 106 sandwiched between these two sheets 104, 105, wherein the backsheet 105 extends outwards beyond longitudinally opposite ends of the core 106 while the top- and backsheets 104, 105 extend outwards beyond transversely opposite side edges of the core 106 to form end flaps 107 and first side flaps 108 and, in the respective side flaps, the top- and backsheets 104, 105 are bonded together along their side edges.

Each end flap 107 is provided with a slit 109 transversely dividing it in two halves and extending to a longitudinal end of this end flap 107. The end flap 107 preferably has an appropriate stretchability and, to achieve this, the backsheet 105 may be made of material having a stretchability at least longitudinally of the pad member 102 or a suitable elastic member may be attached, in its stretched state, to the end flap 107.

The pad member 102 further comprises second side flaps 111 each folded in two and provided with an elastic member 110 attached in its stretched state to the inner surface of the flap along the folding line. These second flaps 111 are placed upon the respective first side flaps 108 and bonded thereto along side edges opposite to said folding lines, respectively. Each second side flap 111 has longitudinally opposite ends collapsed outwards and bonded together by means of ultrasonic welding, heat welding, adhesive or the like. Accordingly, the second side flaps 111 are biased by the contractibility of the respective elastic members 110 to rise. Alternatively, the second side flaps 111 may be formed by extensions of the respective first side flaps 108, though not shown.

To suspend the pad member of the foregoing construction, the longitudinally opposite ends of the respective end flaps 107 are bonded to the inner surface of the pants member 101 adjacent the waist line by means of ultrasonic welding, heat welding, adhesive or the like in such a manner that, over the crotch zone, a gap is formed between the bottom surface of the pad member 102 and the top surface of the pants member 101.

The pants member 101 may be made from a laminate of a stretchable nonwoven fabric 101a and a stretchable and moisture-permeable plastic film 101b and may include an elastic member 112 attached thereto circumferentially along the waist line. It should be understood that the elastic member 112 has a stretching stress higher than that of said laminate. For the pad member 102, the backsheet 105

may be made from a laminate of a stretchable nonwoven fabric 105a and a stretchable and moisture-permeable plastic film 105b, the topsheet 104 may be made from a nonwoven fabric, the core 106 may be made from fluff pulps mixed with high absorption polymer powders, and the second side flaps 111 may be made from a water repellent nonwoven fabric.

## 10 Claims

1. A disposable absorbent pad comprising a pad member to be placed at least in the wearer's crotch and a support member to be placed at least around the wearer's waist, said pad member comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core sandwiched between these two sheets, wherein said top- and/or backsheets extend outwardly beyond longitudinally opposite ends and transversely opposite side edges of said core to form end and side flaps, respectively, said end flaps are formed with slits bisecting them and extending to the longitudinally opposite ends thereof, said side flaps are provided at least in their outer zones and their crotch zones with longitudinally stretchable elastic members by attaching them in their stretched state to said side flaps, said side flaps are partially folded inwards with said elastic members being held in their stretched state and bonded together at longitudinally opposite ends of these folded portions, and wherein said support member is connected to the longitudinally opposite ends of said end flaps, respectively.
2. A disposable absorbent pad according to Claim 1, wherein said portions of the side flaps folded inwards are further partially folded outwards.
3. A disposable absorbent pad according to Claim 1 or 2, wherein said top- and backsheets are made of material having a stretchability at least longitudinally of said pad member and thereby said end flaps are provided with a longitudinal stretchability.
4. A disposable absorbent pad according to Claim 1, 2 or 3, wherein said elastic members are arranged so as to extend further into said end flaps and thereby said end flaps also are provided with a longitudinal stretchability.
5. A disposable absorbent pad according to any preceding claim, wherein said elastic member extending adjacent the outermost edge of said inwardly folded portion of each side flap has a stretching stress higher than that of said other

elastic member.

6. A disposable absorbent pad according to any preceding claim, wherein said support member comprises an elastic waist band.

5

7. A disposable absorbent pad according to any one of claims 1 to 5, wherein said support member comprises short pants with an elastic waist band.

10

8. A disposable absorbent pad according to any one of claims 1 to 5, wherein said support member comprises a single band having longitudinally opposite ends and at least one of these ends is provided with fastener means by which the other end is detachably fastened to said one end.

15

9. A disposable absorbent pad according to any one of claims 1 to 5, wherein said support member comprises a waist band closed in endless fashion.

20

25

30

35

40

45

50

55

6

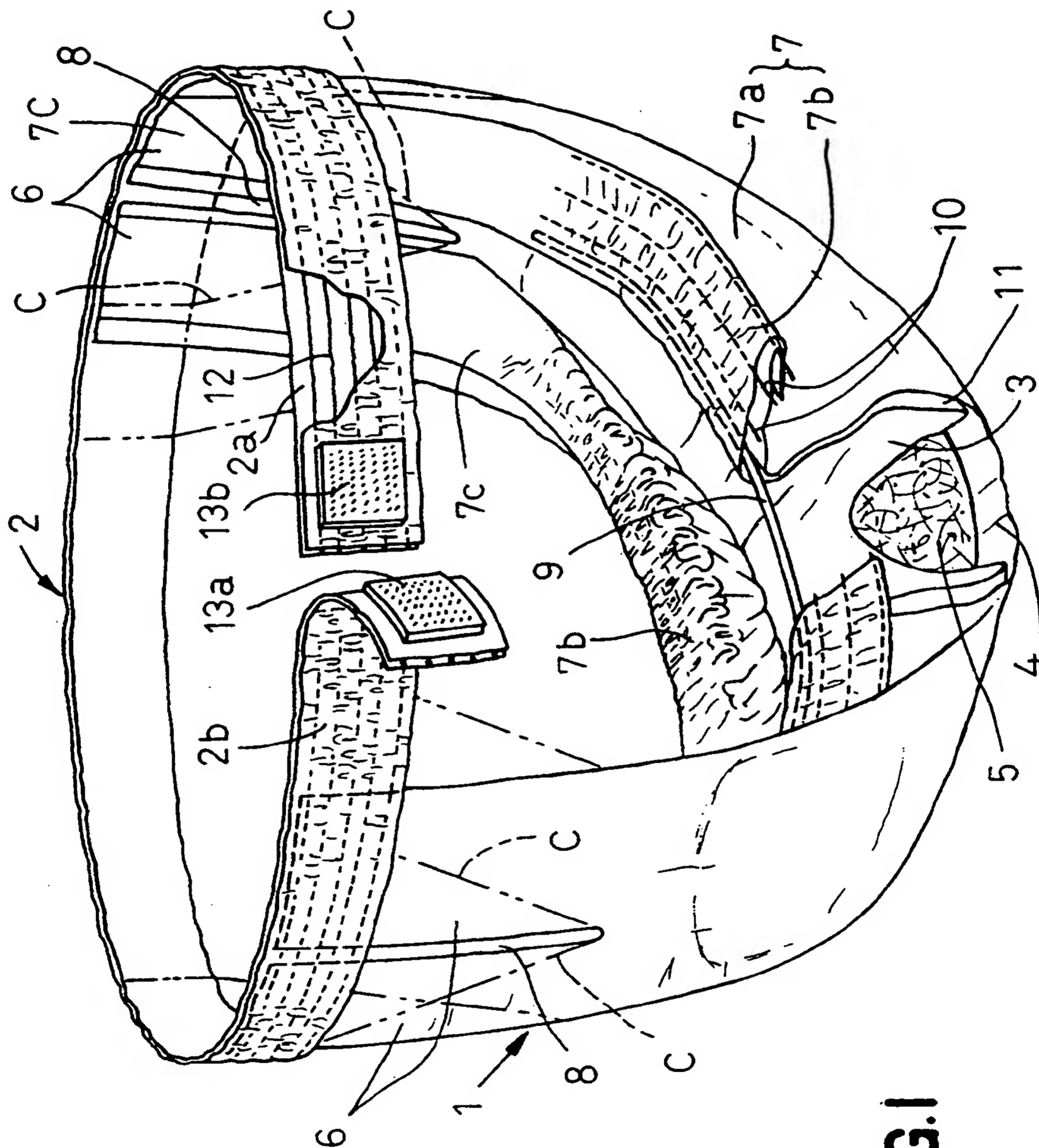


FIG. 1

FIG.2

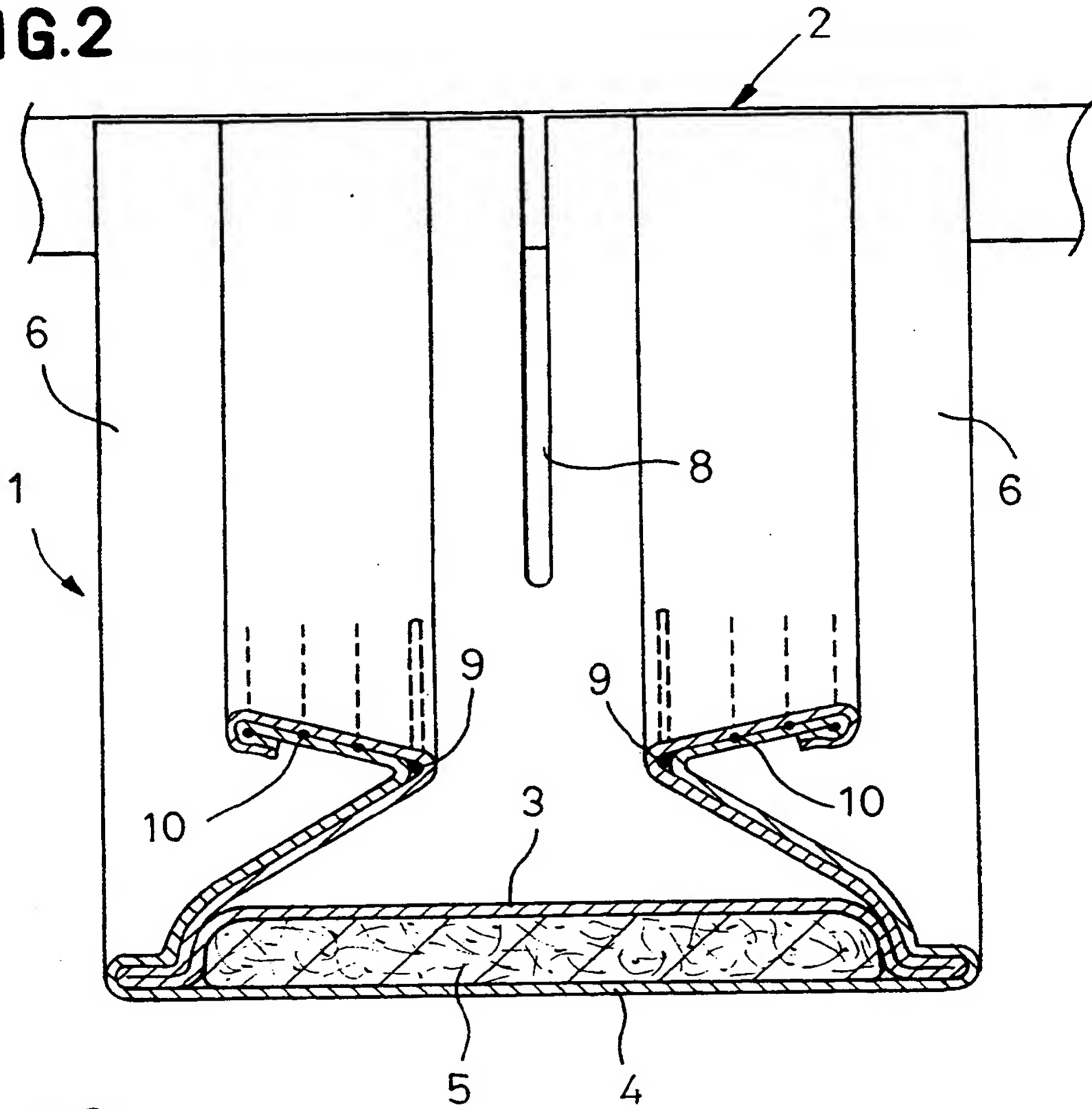


FIG.3

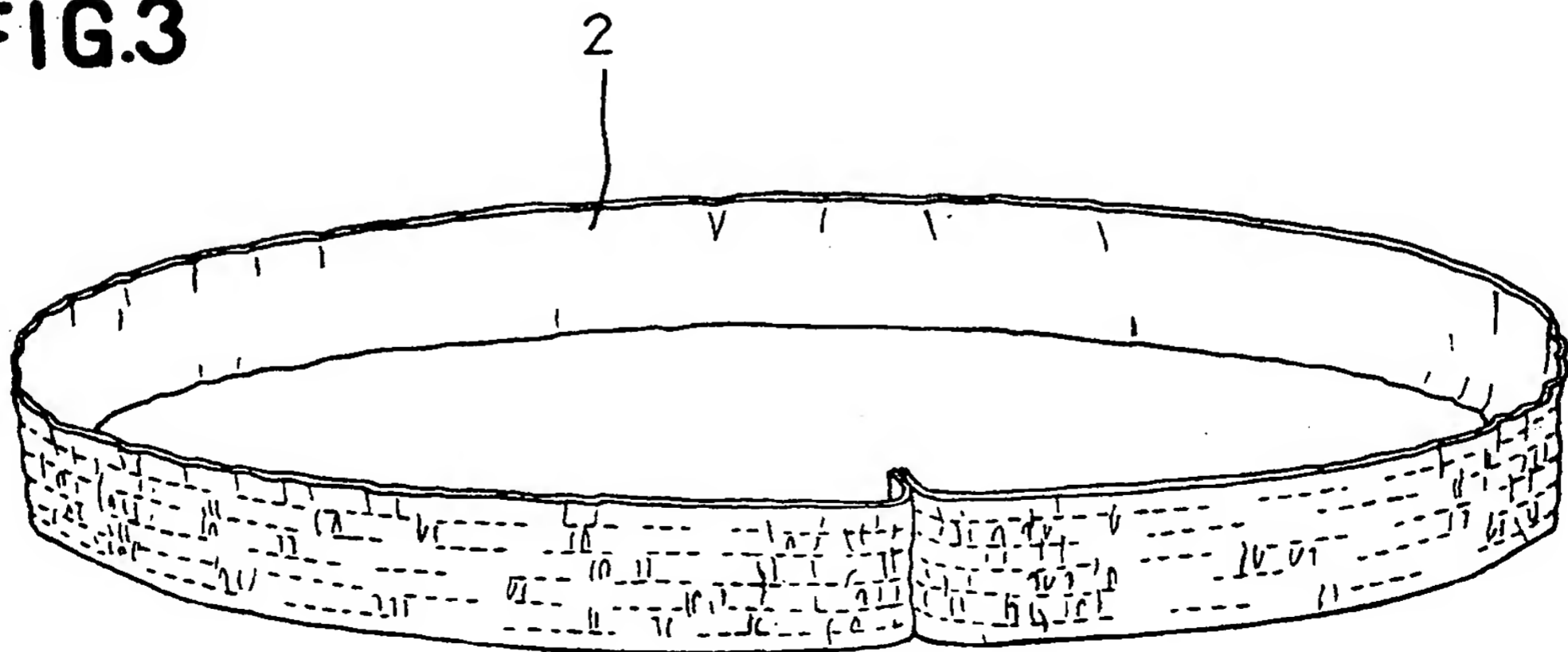


FIG.4

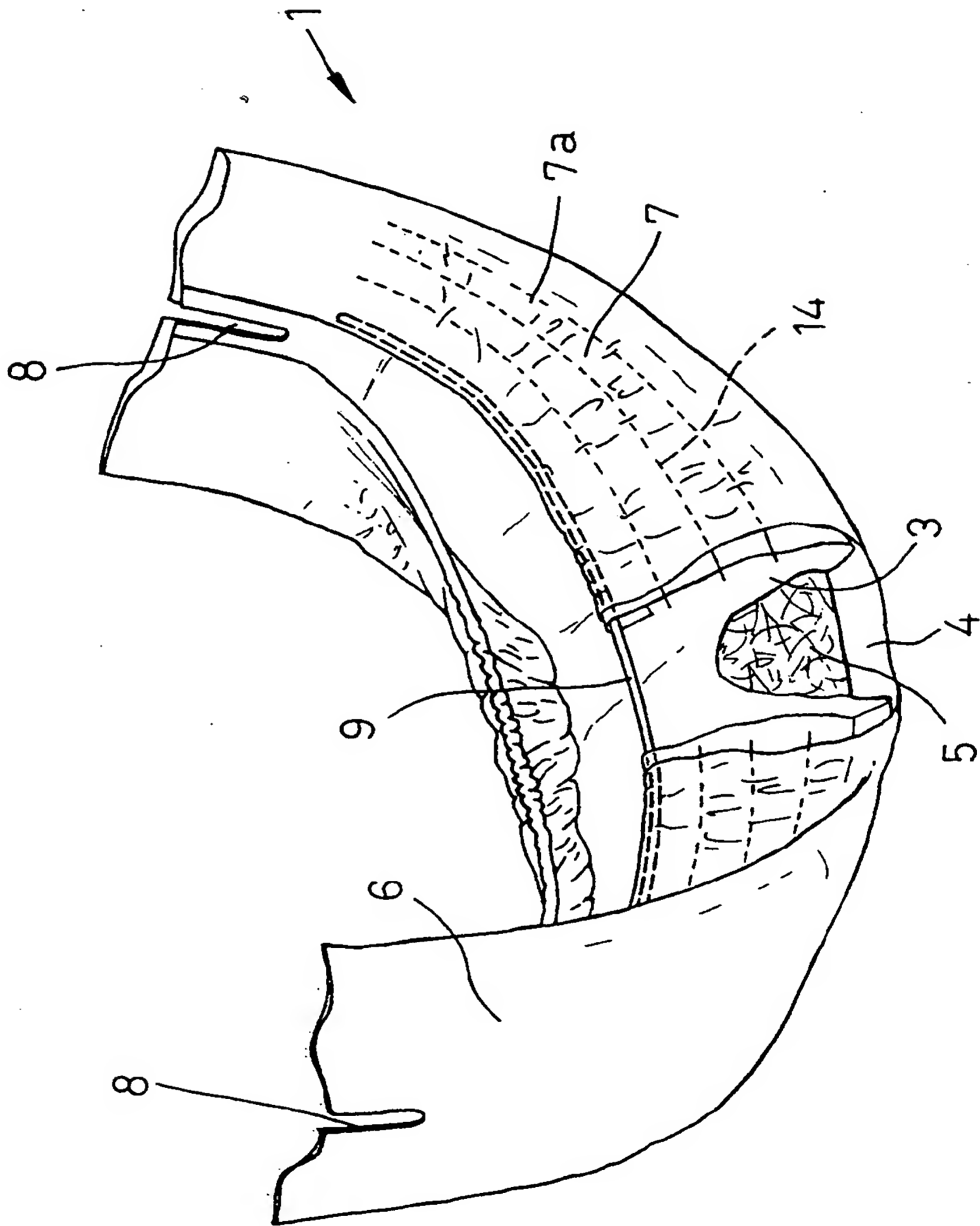
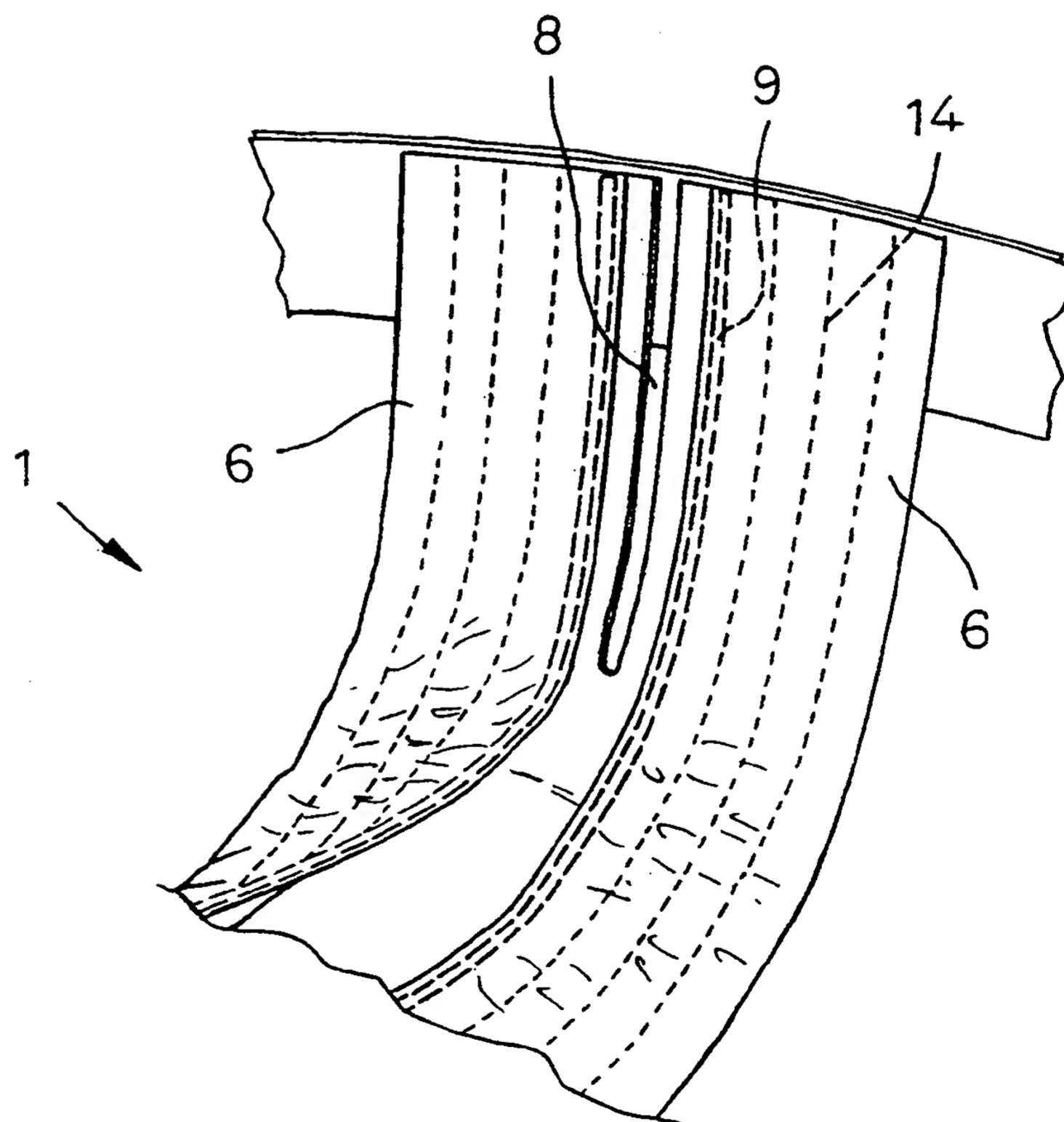
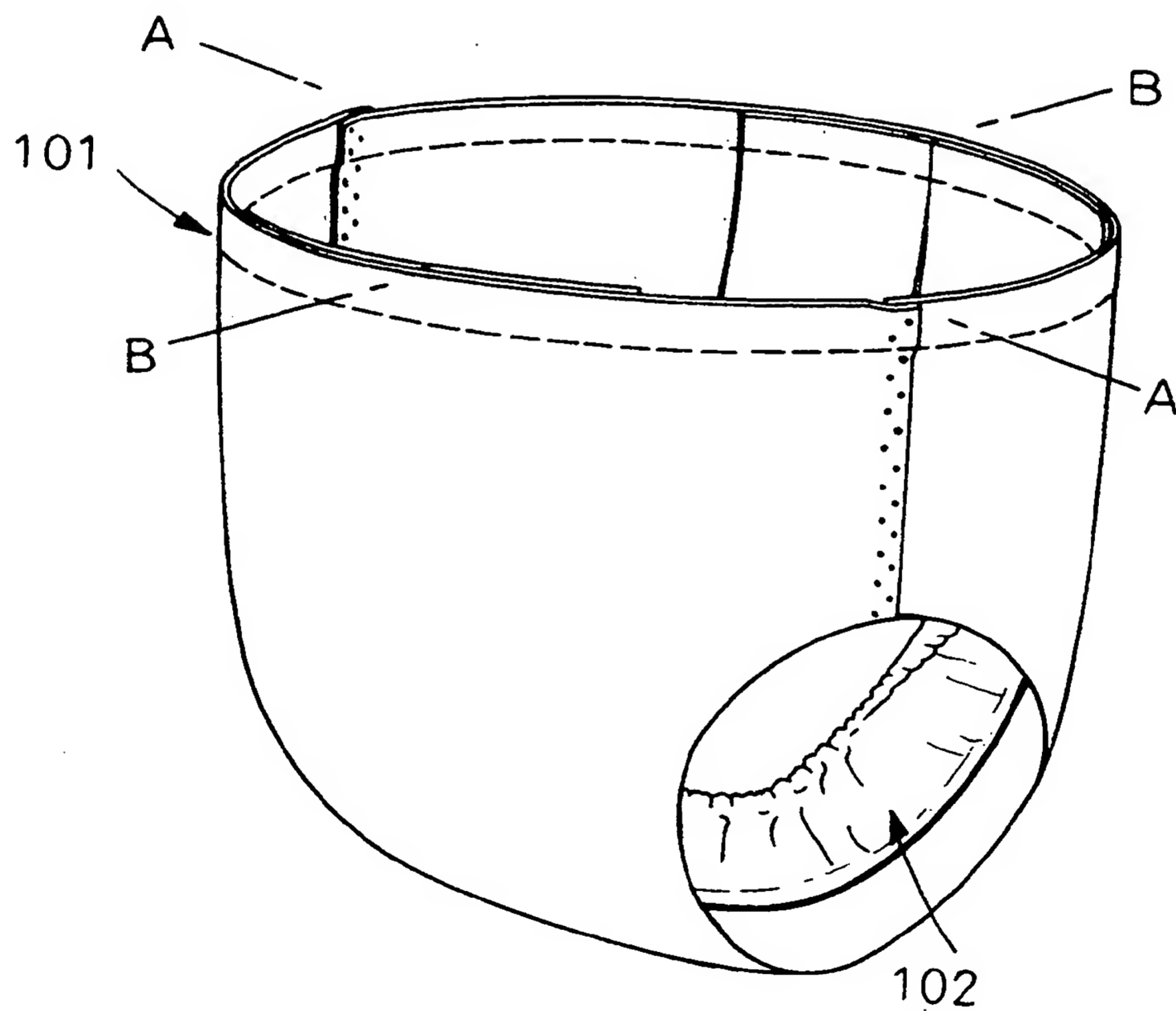


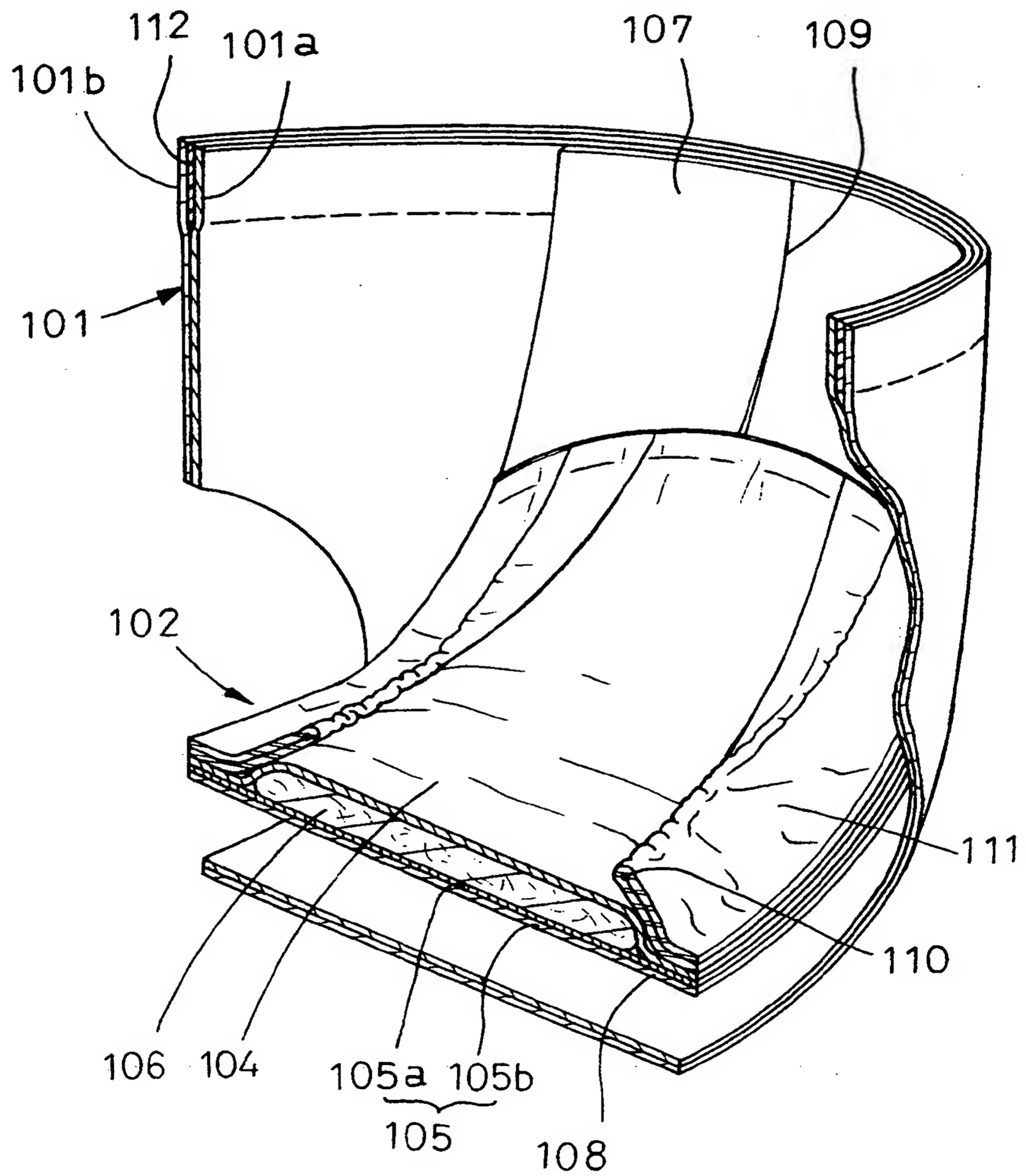
FIG.5



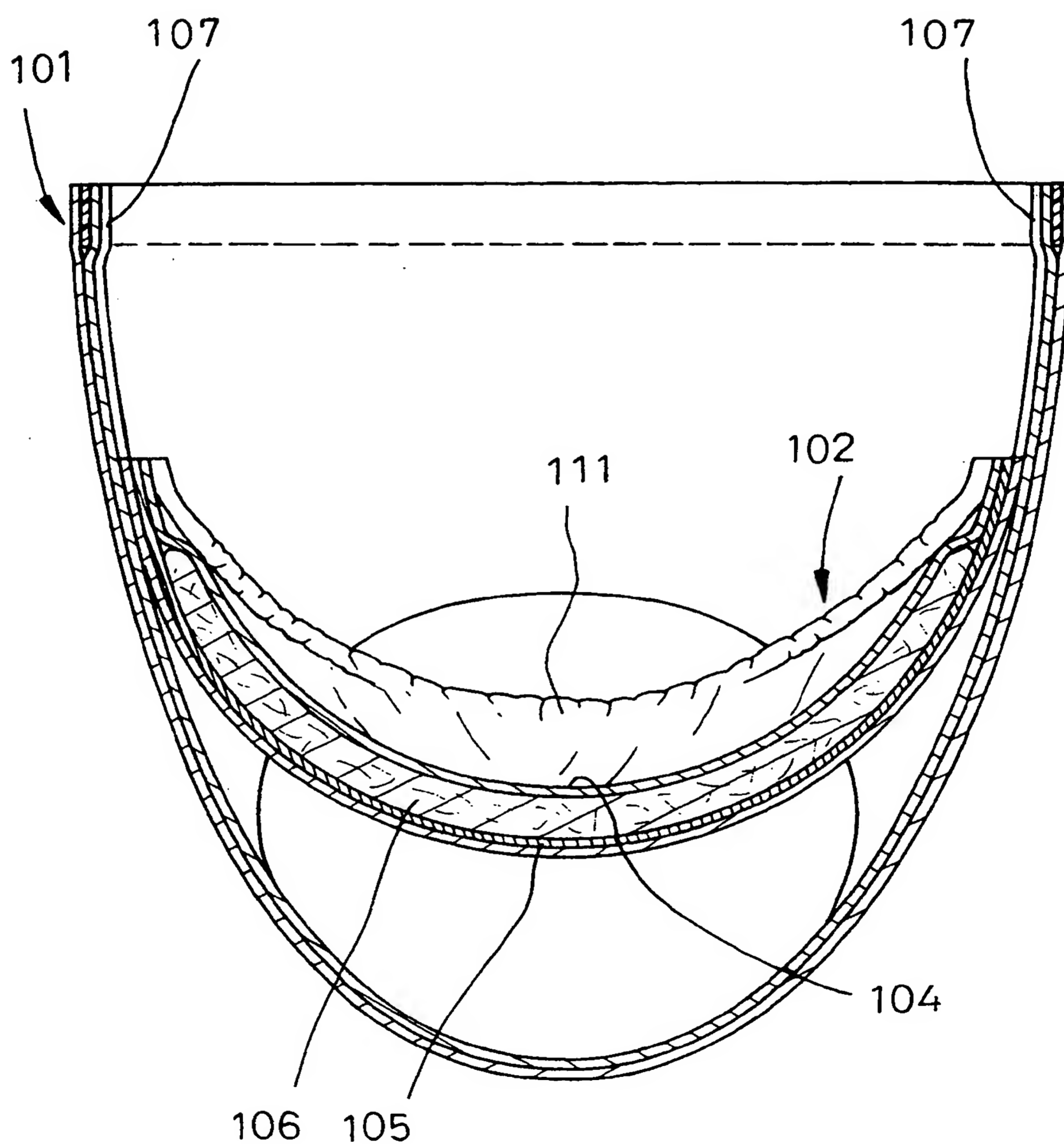
**FIG.6**



**FIG.7**



**FIG.8**





(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

**EP 0 648 482 A3**

(12)

**EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
16.10.1996 Bulletin 1996/42

(51) Int Cl.<sup>6</sup>: **A61F 13/15, A61F 5/44**

(43) Date of publication A2:  
19.04.1995 Bulletin 1995/16

(21) Application number: **94307566.3**

(22) Date of filing: **14.10.1994**

(84) Designated Contracting States:  
**BE DE ES FR GB IT NL SE**

(30) Priority: **15.10.1993 JP 258719/93**  
**08.12.1993 JP 307753/93**

(71) Applicant: **UNI-CHARM CORPORATION**  
**Kawanoe-shi Ehime-ken (JP)**

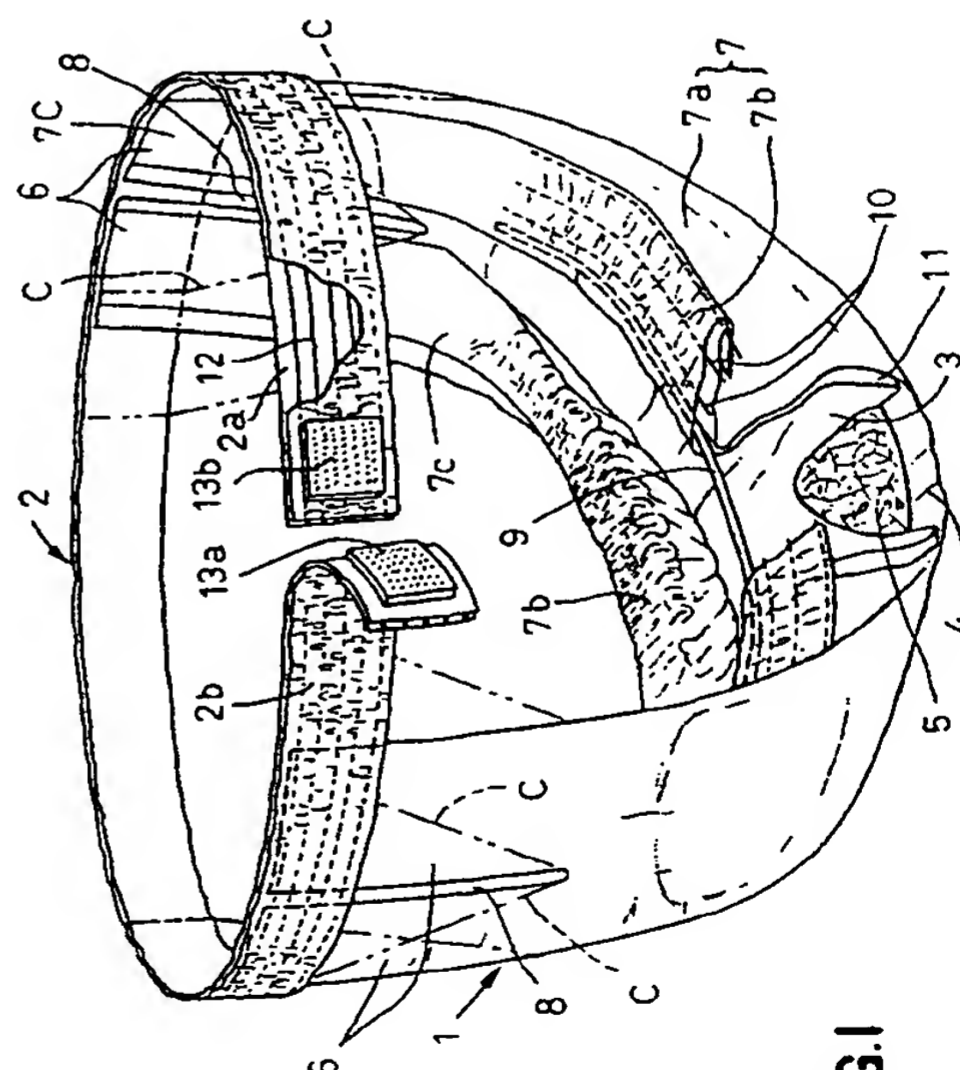
(72) Inventors:  
• **Yamamoto, Masamitsu**  
**Kawanoe-shi, Ehime-ken (JP)**

• **Yamaki, Rumi**  
**Kawanoe-shi, Ehime-ken (JP)**  
• **Kitaoka, Hideaki**  
**Funabashi-shi, Chiba-ken (JP)**

(74) Representative:  
**Murgatroyd, Susan Elizabeth et al**  
**Baron & Warren**  
**18 South End**  
**Kensington**  
**London W8 5BU (GB)**

**(54) Disposable absorbent pad**

(57) A disposable absorbent pad comprises a pad member (1) adapted to present a boat-shape under the contractile force of elastic members (9,10) contained in side flaps (7), and an elastic support member (2). Longitudinally opposite ends of the pad member (1) are connected to front and rear sides of the support member (2) by end flaps (6) each comprising top- and backsheets (3,4) of the pad member (1) and divided into a pair of end flap halves by a slit (8) so as to function as a suspending strap. The end flap halves are set apart in a V-shape with the slit (8) therebetween as the support member (2) is stretched and contribute to suspend the pad member (1) with high stability.



**FIG.1**

**BEST AVAILABLE COPY**

**EP 0 648 482 A3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 7566

| DOCUMENTS CONSIDERED TO BE RELEVANT  |  |  |  |
|--|--|--|--|
| Category   | Citation of document with indication, where appropriate, of relevant passages        | Relevant to claim                                  | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| Y  | US-A-4 964 860 (GIPSON WILLIAM P ET AL)<br>23 October 1990<br>* the whole document * | 1-4,6-8  | A61F13/15<br>A61F5/44                        |
| Y  | EP-A-0 450 541 (KIMBERLY CLARK CO) 9<br>October 1991<br>* the whole document *       | 1-4,6-8  |  |
| Y  | US-A-4 846 825 (ENLOE KENNETH M ET AL) 11<br>July 1989<br>* claims; figures *        | 4,7  |  |
| P,A  | WO-A-94 09736 (THE PROCTER & GAMBLE<br>COMPANY) 11 May 1994<br>* claims; figures *   | 1  |  |
| A  | EP-A-0 374 542 (PROCTER & GAMBLE LTD) 27<br>June 1990<br>* the whole document *      | 1,3  |  |
| A  | US-A-4 704 115 (BUELL KENNETH B) 3<br>November 1987<br>* claims; figures *           | 1  | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.6)      |
| A  | WO-A-91 08725 (PROCTER & GAMBLE) 27 June<br>1991<br>* claims; figures *              | 1  | A61F   |
| A  | US-A-4 210 143 (DE JONCKHEERE RAPHAEL) 1<br>July 1980<br>* column 5, line 7-23 *     | 2  |  |
| A  | FR-A-2 577 115 (BOUSSAC SAINT FRERES BSF)<br>14 August 1986<br>* claims; figures *   | 1  |  |
|  |  | -/--   |  |
| The present search report has been drawn up for all claims   |  |  |  |
| Place of search<br>THE HAGUE   |  | Date of completion of the search<br>21 August 1996 | Examiner<br>Douskas, K                       |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |  |  |  |

EPO FORM 1503 01.81 (P04C011)